



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/573,492	05/15/2006	Koichi Naniwae	8074-1143	9283

466 7590 06/09/2010  
YOUNG & THOMPSON  
209 Madison Street  
Suite 500  
Alexandria, VA 22314

EXAMINER
----------

JONES, ERIC W

ART UNIT	PAPER NUMBER
----------	--------------

2892

NOTIFICATION DATE	DELIVERY MODE
-------------------	---------------

06/09/2010

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

DocketingDept@young-thompson.com

<b>Advisory Action</b> <b>Before the Filing of an Appeal Brief</b>	<b>Application No.</b> 10/573,492	<b>Applicant(s)</b> NANIWAE, KOICHI	
	<b>Examiner</b> ERIC W. JONES	<b>Art Unit</b> 2892	

**--The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

THE REPLY FILED 19 May 2010 FAILS TO PLACE THIS APPLICATION IN CONDITION FOR ALLOWANCE.

1. ☒ The reply was filed after a final rejection, but prior to or on the same day as filing a Notice of Appeal. To avoid abandonment of this application, applicant must timely file one of the following replies: (1) an amendment, affidavit, or other evidence, which places the application in condition for allowance; (2) a Notice of Appeal (with appeal fee) in compliance with 37 CFR 41.31; or (3) a Request for Continued Examination (RCE) in compliance with 37 CFR 1.114. The reply must be filed within one of the following time periods:

- a) ☒ The period for reply expires 3 months from the mailing date of the final rejection.  
 b) ☐ The period for reply expires on: (1) the mailing date of this Advisory Action, or (2) the date set forth in the final rejection, whichever is later. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of the final rejection.

Examiner Note: If box 1 is checked, check either box (a) or (b). ONLY CHECK BOX (b) WHEN THE FIRST REPLY WAS FILED WITHIN TWO MONTHS OF THE FINAL REJECTION. See MPEP 706.07(f).

Extensions of time may be obtained under 37 CFR 1.136(a). The date on which the petition under 37 CFR 1.136(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. The appropriate extension fee under 37 CFR 1.17(a) is calculated from: (1) the expiration date of the shortened statutory period for reply originally set in the final Office action; or (2) as set forth in (b) above, if checked. Any reply received by the Office later than three months after the mailing date of the final rejection, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### NOTICE OF APPEAL

2. ☐ The Notice of Appeal was filed on \_\_\_\_\_. A brief in compliance with 37 CFR 41.37 must be filed within two months of the date of filing the Notice of Appeal (37 CFR 41.37(a)), or any extension thereof (37 CFR 41.37(e)), to avoid dismissal of the appeal. Since a Notice of Appeal has been filed, any reply must be filed within the time period set forth in 37 CFR 41.37(a).

#### AMENDMENTS

3. ☐ The proposed amendment(s) filed after a final rejection, but prior to the date of filing a brief, will not be entered because  
 (a) ☐ They raise new issues that would require further consideration and/or search (see NOTE below);  
 (b) ☐ They raise the issue of new matter (see NOTE below);  
 (c) ☐ They are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal; and/or  
 (d) ☐ They present additional claims without canceling a corresponding number of finally rejected claims.

NOTE: \_\_\_\_\_. (See 37 CFR 1.116 and 41.33(a)).

4. ☐ The amendments are not in compliance with 37 CFR 1.121. See attached Notice of Non-Compliant Amendment (PTOL-324).  
 5. ☐ Applicant's reply has overcome the following rejection(s): \_\_\_\_\_.  
 6. ☐ Newly proposed or amended claim(s) \_\_\_\_\_ would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).  
 7. ☒ For purposes of appeal, the proposed amendment(s): a) ☐ will not be entered, or b) ☒ will be entered and an explanation of how the new or amended claims would be rejected is provided below or appended.  
 The status of the claim(s) is (or will be) as follows:  
 Claim(s) allowed: \_\_\_\_\_.  
 Claim(s) objected to: \_\_\_\_\_.  
 Claim(s) rejected: 3-7, 9, 11-18, 21-25, 27, 29-38 and 49-57.  
 Claim(s) withdrawn from consideration: \_\_\_\_\_.

#### AFFIDAVIT OR OTHER EVIDENCE

8. ☐ The affidavit or other evidence filed after a final action, but before or on the date of filing a Notice of Appeal will not be entered because applicant failed to provide a showing of good and sufficient reasons why the affidavit or other evidence is necessary and was not earlier presented. See 37 CFR 1.116(e).  
 9. ☐ The affidavit or other evidence filed after the date of filing a Notice of Appeal, but prior to the date of filing a brief, will not be entered because the affidavit or other evidence failed to overcome all rejections under appeal and/or appellant fails to provide a showing a good and sufficient reasons why it is necessary and was not earlier presented. See 37 CFR 41.33(d)(1).  
 10. ☐ The affidavit or other evidence is entered. An explanation of the status of the claims after entry is below or attached.

#### REQUEST FOR RECONSIDERATION/OTHER

11. ☒ The request for reconsideration has been considered but does NOT place the application in condition for allowance because:  
See Continuation Sheet.  
 12. ☐ Note the attached Information *Disclosure Statement*(s). (PTO/SB/08) Paper No(s). \_\_\_\_\_.  
 13. ☐ Other: \_\_\_\_\_.

/Thao X Le/  
 Supervisory Patent Examiner, Art Unit 2892

/ERIC W JONES/  
 Examiner, Art Unit 2892  
 6/3/2010

Continuation of 11. does NOT place the application in condition for allowance because:

In Re applicant's argument(s) that Chiu et al (5,407,531) would not satisfy the claimed relationship of  $|R| < |r_2| < |r_1|$  by either anticipation or obviousness, the examiner, respectfully, disagrees based the following:

1. Chiu et al disclose various gas flow conditions which either:
  - a. etch the semiconductor layer with etch gas(es) solely.
  - b. etch the semiconductor layer with both etch and growth gases simultaneously or
  - c. grow a semiconductor layer.

In case a, which would represent  $r_1$ , the highest etch rate of 0.1 to 3 micrometers per hour (0.0278 to 0.83 nanometers per second) is achieved. In case b, which would represent  $r_1 + r_2$ , the overall etch rate due to  $r_1$  alone is reduced since the  $r_2$  growth gas component is flowed at a rate of upto 40% of the gas flow rate of the  $r_1$  gas component. Further, Chiu et al disclose that the function of the  $r_2$  gas component is introduced to smooth the etch of the  $r_1$  gas component by filling in etch pits created by the  $r_1$  gas etching. The leads to the effect of reducing the overall etch rate of 0.0278 to 0.83 nm/sec due to  $r_1$  gas etching alone.

Based on this evidence, it can be argued through either anticipation or obviousness that since the overall rate of change  $R$  of the semiconductor layer is negative, which means the final layer thickness is reduced due to the overall effect of etching whether case a exists where etching is due solely to etch gas(es) or case b, where etching is due to both etch and growth gases.

Quantatively, rate of change  $R$  equals etch rate  $r_1$  due to etch gases alone yield etch rates of 0.0278 to 0.83 nm/sec; rate of change  $R$  equals etch rate  $r_1 + r_2$  due to both etch and growth gases would yield a rate less than the 0.0278 to 0.83 nm/sec range achieved by etch gas(es) alone since it has been pointed out that the growth gas component inhibits etching by filling etch pits to smooth the overall etch. See Chiu et al column 3, lines 3-19; 41-60 and column 5, lines 43-55

Since the flow of the growth gas component is flowed at only upto 40% of the etch gas flow component and the overall rate of change  $R$  of the semiconductor layer is negative (layer thickness reduced), the  $r_2$  growth rate can either be anticipated to be or is obviously less than the 0.0278 to 0.83 nm/sec range achieved by etch gas(es) alone. See Chiu et al column 3, lines 3-19; 41-60 and column 5, lines 43-55

For example, if  $r_1$  has an etch rate of 0.0278 nm/sec,  $r_2$  is anticipated to be or is obviously upto but less than 0.0278 nm/sec for the overall rate of change  $R$  to be negative (layer thickness reduced). Therefore,  $r_2 < r_1$ . Likewise, if  $r_1$  has an etch rate of 0.83 nm/sec,  $r_2$  is anticipated to be or is obviously upto but less than 0.83 nm/sec for the overall rate of change  $R$  to be negative.

Therefore, Chiu et al disclose the conditions under which the claimed relationship of  $|R| < |r_2| < |r_1|$  is satisfied by either anticipation or obviousness.

It should also be noted that either a prima facie case of either anticipation or obviousness has been established since Chiu et al disclose a substantially identical process(es) to the applicant's claimed and specification disclosed process(es). Therefore, one would expect similar results as the claimed results such as the relationship of  $|R| < |r_2| < |r_1|$ . See MPEP 2112.02.

Based on the above responses to the applicant's arguments, it is deemed the 35 USC 102 and 35 USC 103 rejections of the claims to Chiu et al are proper. Thus, all current Final Rejections (claims 3-7, 9, 11-18, 21-25, 27, 29-38 and 49-57) to Chiu et al are maintained.

It should be noted that the applicant's argument(s) with respect to Koichi JP2003-282455 are persuasive. Therefore, ALL Final Rejections to Koichi only are withdrawn.